

## CHAPTER 7. GULF OF MEXICO OPERATIONS

### 1. CHARACTERISTICS OF THE AIRSPACE.

*a. General.* The airspace above and surrounding the Gulf of Mexico is complex and includes heavy concentrations of multi-altitude military operations, high altitude air carrier operations, and low altitude helicopter activity. There are numerous alert, warning, noise-sensitive, and restricted areas; control zones; heavy concentrations of student pilot activity; and areas of communication and navigation unreliability. As the volume of air traffic in this area has increased, it has become more common for flights to deviate from track, fail to make position reports, or report an incorrect position. Separation of air traffic is a matter of increasing concern in this airspace because of this increased activity. Any operation that is conducted in international airspace on an instrument flight rules (IFR) flight plan, a visual flight rules (VFR) controlled flight plan, or at night and that continues beyond the published range of normal airways navigation facilities (nondirectional radio beacon (NDB), very high frequency (VHF) omnidirectional radio range (VOR)/distance measuring equipment (DME)) is considered to be a long-range navigation operation. Long-range navigation in a control area (CTA) requires that the aircraft be navigated to the degree of accuracy required for the control of air traffic; that is, the aircraft should remain within one-half of the lateral separation standard from the centerline of the assigned track. The aircraft should also remain within the established longitudinal and vertical separation standards for the area of operation. These separation standards can be found in the International Civil Aviation Organization (ICAO) Regional Supplementary Procedures Document 7030/2. For flights conducted within international airspace under U.S. jurisdiction, Federal Aviation Administration (FAA) Order 7110.83, "Oceanic Air Traffic Control Handbook" provides a simplified version of these separation standards. Federal Aviation Regulations (FAR) 91.703(a) requires that civil aircraft must comply with ICAO Annex 2 when operating over the high seas. Annex 2 requires that "aircraft shall be equipped with suitable instruments and with navigation equipment appropriate to the route being flown." In addition, Annex 6, Part II stipulates that an airplane operated in international airspace be provided with navigation equipment that will enable it to proceed in accordance with the flight plan and the requirements of the air traffic services. Annex 2 further requires that an aircraft shall adhere to the "current flight plan unless a request for change has been made and clearance received from the appropriate air traffic control (ATC) facility."

*b. Control of Air Traffic.* ATC of the airspace over the Gulf of Mexico is assigned to the Houston Air Route Traffic Control Center (ARTCC). This center controls airspace within and outside of the U.S. Air Defense Identification Zone (ADIZ). The Houston CTA/Flight Information Region (FIR) includes the airspace in the northern part of the Gulf of Mexico. This control extends southward from Houston Center's coastal CTA to the middle of the Gulf in the vicinity of longitude N24°30'. The Houston CTA/FIR borders Houston's coastal control in the west and north, and meets Miami's oceanic CTA/FIR at latitude W86 in the east. The southern border of the Houston CTA/FIR is under the control of several Mexican FIR/upper control areas (UTA) and is controlled by Havana CTA in the southeast. Flight operations in this area must be conducted in accordance with the applicable FAR and ICAO Annex 2, "Rules of the Air." The navigation and communication equipment required for operations over the high seas must be installed and fully operational for flight in this airspace.

*c. Flight Plans.* Unless otherwise authorized by ATC, no aircraft may be operated in oceanic airspace unless a flight plan has been filed. VFR operations in oceanic airspace are permitted only between sunrise and sunset at or below flight level (FL) 180. Although VFR flights are permitted in offshore airspace (the airspace between the U.S. 12-mile limit and the oceanic control area (OCA)/FIR boundary), instrument meteorological conditions (IMC) are commonly encountered. It is recommended that pilots hold an instrument rating, the aircraft be equipped for IFR flight, and that an IFR flight plan be filed.

**e. Concept of Navigation Performance.** The concept of navigation performance involves the precision that must be maintained for both the assigned route and altitude by an aircraft operating within a particular area. Navigation performance is measured by the deviation (for any cause) from the exact centerline of the route and altitude specified in the ATC clearance. This includes errors due to degraded accuracy and reliability of the airborne and ground-based navigational equipment and the flightcrew's competence in using the equipment. Flightcrew competence involves both flight technical errors and navigational errors. Flight technical error is defined as the accuracy with which the pilot controls the aircraft as measured by success in causing the indicated aircraft position to match the desired position. Standards of navigational performance vary depending on traffic density and the complexity of the routes flown. Variation in traffic density is reflected in the different separation minimums applied by ATC in these two areas. For example, the minimum lateral distance permitted between coaltitude aircraft in Chicago Center's airspace is 8 nautical miles (NM) (3 NM when radar is used), while in North Atlantic (NAT) MNPS airspace it is 60 NM. The airspace assigned by ATC has lateral dimensions on both sides of the exact centerline of the route of flight specified in the ATC clearance equal to one-half of the lateral separation standard (minimum). For example, the overall level of lateral navigation performance necessary for flight safety must be within 4 NM of the airway centerline in Chicago Center's airspace, and within 30 NM in NAT MNPS airspace. FAR's 121.103 and 121.121 require that each aircraft must be navigated to the degree of accuracy required for air traffic control. FAR 91.123 requirements related to compliance with ATC clearances and instructions also reflect this fundamental concept. The concept of navigational performance is also inherent in the ICAO Standards and Recommended Practices (SARPs). For example, Annex 2 states that the aircraft "shall adhere to its current flight plan" and "when on an established air traffic service (ATS) route, operate along the defined centerline of that route."

**f. Degree of Accuracy Required.** The fundamental concept for all IFR navigation standards, practices, and procedures is that all IFR aircraft must be navigated to the degree of accuracy required for control of air traffic. When a flight remains within the assigned three-dimensional block of airspace at all times, that aircraft is considered to be navigated to the degree of accuracy required for the control of air traffic. If an aircraft deviates outside its assigned block of airspace (except during a declared emergency), that aircraft has not been navigated to the required degree of accuracy. ATC separation minimums represent the minimum dimensions of a three-dimensional block of airspace that can be assigned by ATC to control flight. These separation minimums have been established for IFR operations in controlled airspace. These standards are usually established through international agreement and implemented through national regulations. These minimums are established for particular categories of navigational operation and specified areas. Examples include navigation on airways in the national airspace of ICAO member states and long-range navigation in oceanic or remote land areas. Separation minimums establish the minimum lateral, vertical, and longitudinal distances that can be used to safely separate aircraft operating within a specified area. Separation minimums also represent the minimum level of overall navigation performance which can be accommodated at any time without jeopardizing flight safety. Any aircraft deviating greater than one-half the separation minimums established for that operation has failed to meet the required level of navigational performance and to navigate to the degree of accuracy required for control of air traffic. For example, the vertical separation minimum for airplanes operating above flight level (FL) 290 in the United States is 2000 feet. Each aircraft's actual altitude must remain within + 1000 feet of the assigned altitude even when factors such as atmospheric pressure variations and instrument or pilot errors are considered. Where ATS's are provided by the United States, separation minimums are established by the FAR and ATC directives. Where ATS's are provided by contracting ICAO member states, separation minimums are established by those states' national regulations and in ICAO documents. Operations in uncontrolled airspace are not provided ATS, and separation minimums are not normally established for uncontrolled airspace. U.S. national airspace separation minimums can be found in FAA Order 7110.65, "Air Traffic Control." FAA Order 7110.83, "Oceanic Air Traffic Control," prescribes separation minimums in international oceanic airspace delegated to the United States by ICAO. ICAO Document 7030/3, "Regional Supplementary Procedures," prescribes separation minimums in international airspace.

N27°28' W086°00' to N27°30' W087°42' to  
N25°50' W088°15' to N25°37' W091°55' to  
N24°40' W093°19' to N24°28' W088°01' to  
N24°00' W086°00' to beginning point.

Pilots planning flights through this area should be aware of the communications and position reporting requirements. HF communications are available for all oceanic flights, and limited VHF coverage is also available on 130.7 megahertz (MHz). The communication requirements for IFR flights within the Houston OCA are as follows:

- (1) The aircraft must have functioning two-way radio communications equipment capable of communicating with at least one ground station from any point on the route.
- (2) The crew must maintain a continuous listening watch on the appropriate frequency.
- (3) All mandatory position reports must be made.

**d. Position Reports.** When flying an oceanic route in the Gulf of Mexico, position reports must be made over all designated reporting points. A position report must also be made upon crossing the FIR boundary. Unless otherwise required, reporting points should be located at intervals of 5 or 10 degrees latitude (if flying north/south) or longitude (if flying east/west) either north or south of the equator or east or west of the 180 degree meridian. Aircraft transversing 10 degrees of latitude or longitude in 1 hour, 20 minutes should normally report at 10 degree intervals. Slower aircraft should report at 5 degree intervals. In the absence of designated reporting points, position reports shall be made as instructed by ATC. Position reports are vital to air traffic safety and control. Inability to comply is a violation of the FAR and ICAO requirements.

**e. Navigation Requirements.** Class II navigation on routes in the Gulf of Mexico can be conducted using GPS, VOR/DME, and NDB supplemented by dead reckoning (DR). These routes are located off-shore and are shown on en route charts. The areas are established by FAA Order 7110.2C, "Procedures for Handling Airspace Matters," and serve aircraft operations between U.S. territorial limits, OCA/FIR boundaries, and/or domestic flights operating in part over the high seas. These transition CTA's permit ATC to apply domestic procedures and separation minimums. Because independent radar surveillance is maintained within these CTA's, separation minimums are not as large as for other OCA's. As long as radar surveillance is maintained, operations may be conducted on Gulf routes using VOR/DME and NDB supplemented by DR. The radar surveillance provides an equivalent level of safety even though DR may be required for extended periods. Because of the proximity of these routes to shore-based facilities, the accuracy of DR can be enhanced by the use of shore-based navigational aids (navaids). The DR techniques and procedures must be approved as part of the air carrier operator's training program, and should include contingency training for weather avoidance and emergencies. Approval for use of a single long-range navigation system on these routes, as well as the navigation techniques discussed in this paragraph, are part of the operations specifications issued to air carrier operators.

**f. Use of NDB for Navigation.** The use of NDB as a primary source of navigation on long-range flights presents the operator with numerous limitations and restrictions inherent in low frequency radio equipment and the low frequency signals they receive. NDB navaids of the highest power (2,000 watts or greater) that are maintained and flight checked as suitable for navigation, are limited to a usable service and/or reception range of 75 NM from the facility at any altitude. Although the operator may be able to receive standard AM broadcast stations with NDB equipment, primary dependence on these facilities for navigation is a questionable operating practice. The following are some of the inherent problems associated with reception of these stations:

- (1) Infrequent station identification.
- (2) Foreign language station identification may be impossible without knowledge of the language.

- (3) Transmitter sites are not always located with the studio facilities.
- (4) Termination of service without notice.
- (5) Weather or atmospheric disturbances may cause erratic and unreliable signal reception.
- (6) Flight checks may not have been conducted to verify the suitability and reliability of the facility and signal for navigation.
- (7) The "shoreline/mountain" effect may cause signal fluctuations.
- (8) Standard broadcast stations are not dedicated for navigation purposes.

Considering these limitations, the operator should be able to navigate so as to maintain the course specified in the ATC clearance. The inadequacies of NDB as the sole source of navigation must be carefully evaluated, as an error of 10 degrees over 2,000 miles can result in a deviation of 350 miles.

### 3. INTERNATIONAL OPERATIONS.

*a. Operations to Mexico.* Pilots should be aware of the landing restrictions in effect at Mexico City Airport. A fee of 3.77 million pesos (approximately \$ 1,240) will be imposed on aircraft that land or depart from this airport during peak hours (7:00 am - 10:00 am; 5:00 - 9:00 pm). If an aircraft lands during peak hours but departs during nonpeak hours, 75 percent of the fee will be imposed. Operators planning a flight to Mexico should check the NOTAM's for updated information. FAR Part 121 operations to Guadalajara, Mexico must meet FAR 121.445 special airport qualification requirements.

*b. Operations to Cuba.* FAR 121.445 requirements for special airport qualifications apply to FAR Part 121 operations landing or departing from Guantanamo Bay Naval Air Station. Operators should be aware that the Cuban government has issued a warning that Cuban Armed Forces will shoot down any aircraft that penetrates Cuban airspace without authorization and refuses to land for inspection.

### 4. MILITARY AND HELICOPTER OPERATIONS.

*a. Military Operations Areas (MOA).* Military operations represent approximately one third of the air traffic in the Gulf of Mexico. These operations include a high volume of nonhazardous training flights, which are contained within MOA's. MOA's and military training routes (MTR) are shown on VFR and sectional maps. However, MTR's are subject to change every 56 days. Because the charts are only issued every 6 months, pilots are strongly advised to contact the nearest FSS for current route dimensions and status.

*b. Helicopter Operations.* Pilots should be aware of the nature and extent of helicopter operations within the Gulf of Mexico. The density of helicopter traffic is primarily due to the presence of numerous oil rigs and drilling platforms in the Gulf. The majority of these flights are below 2,000 feet mean sea level at varying distances from the coastline. Additional information on helicopter operations is contained in Chapter 9 of this advisory circular (AC).